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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,972	02/09/2001	Shyhing M Pien	ELECHEM-101J	8201

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260 Bear Hill Road  
Waltham, MA 02451-1018

07/25/2003

EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 07/25/2003

2

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/779,972

Applicant(s)

PIEN ET AL.

Examiner

Wills M Monique

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16 & 34 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16 & 34 contains the trademark/trade name Union Carbide Grafoil®.

Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe material and, accordingly, the identification/description is indefinite.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9, 11-14, 19, 20, 22-27, 29-32, 35 & 37– 38 & 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al. U.S. Patent 6,322,919.

Yang teaches a fuel cell bipolar plate assembly comprising a multipart separator plate comprising a distributor plate for directing flow 12, a frame 14 surrounding the distributor plate, an impervious separator layer 62 and a seal layer 64 between the separator and distribution plate (Fig. 4 and col. 5, lines 20-55). The separator layer 62 includes fuel manifolds, oxidant manifolds, coolant manifolds for directing fluid flow and assembly apertures that correspond to those of the bipolar plate (col. 5, lines 35-45). The distributor plate and separator plate direct flow to the membrane electrode assembly 66 (col. 1, lines 15-50 & col. 5, lines 50-65). The frame 14 is made from suitable plastic materials such as polycarbonate or epoxy that is injection molded. The frame is thus inherently chemically and thermally stable in the fuel cell operating

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environment. The frame includes a recess on its inner periphery for accommodating the periphery of the MEA and includes stops for directing fluid flow (Figs. 2-3 and col. 3 lines 54-68 & col. 4 lines 1-15). The fuel being supplied in the fuel cell stack is hydrogen (col. 1, lines 25-30). The separator layer 62 may be made from graphite or stainless steel (col. 4, lines 40-45 & col. 5, lines 25-30). The seal layer 64 may be made of epoxy, polycarbonate, aluminum or titanium (col. 4, lines 50-55, col. 5, lines 35-50). Therefore, the seal layer 64 is inherently thermally and chemically stable and electrically conductive in the fuel cell environment.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 13-14, 22-25, 31, 32, 35, 36 & 40 are rejected under 35

U.S.C. 102(e) as being anticipated by Molter U.S. Pub. No. 2001/0049044.

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Molter teaches a multipart separator plate comprising a separator plate 50, a sealing gasket 38, a frame 33 circumscribing a distributor plate 43/34 (fig. 3). Said layers include hydrogen, oxygen and coolant manifolds (Fig. 3 and ¶s 20-21 & 25). The distributor plate directs hydrogen oxygen and coolant to the membrane electrode assembly (¶29). The frame is inherently chemically stable and thermally stable under fuel cell operating conditions. The seal 38 can be any non-metallic, elastic medium compatible with the electrochemical cell environment and capable of forming the desired seals, such as plastic or rubber (¶28). The gasses supplied to the fuel cell include hydrogen and methanol (¶4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10 & 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. U.S. Patent 6,322,919, as applied to claims 1 and 22 above, and in view of Saito et al. U.S. Patent 6,436,567.

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Yang teaches a multipart separator comprising a frame that can be fabricated from any suitable plastic material including polycarbonate (col. 4, lines 50-55).

The reference is silent to employing polyvinyl material in the frame of the distributor plate.

Saito teaches the functional equivalence of polycarbonate and polyvinyl materials in separator plates for fuel cells.

Therefore, because these two polymeric materials were art recognized equivalents at the time the invention was made for fabricating separator plates for fuel cells, one of ordinary skill in the art would have found it obvious to substitute polyvinyl for polycarbonate. Further, according to the instant specification on page 8, lines 14-17, any plastic material may be used as long as it is stable in fuel cell operating conditions.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. U.S. Patent 6,322,919, as applied to claim 22 above, and in view of Wilson et al. U.S. Patent 6,248,467.

Yang teaches a bipolar multipart separator plate as described hereinabove.

The reference is silent to a distributor plate comprising graphite.

However, Wilson teaches that it is conventional to employ graphite material in bipolar distributor plates, because the material is inexpensive, light weight, readily available and chemical stabile in fuel cell environments (col. 4, lines 30-45).

Yang and Wilson are properly combinable because they are from the same field of endeavor namely, the fabrication of multipart separator plates.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ graphite in distributor of Yang because the material is inexpensive, light weight, readily available and chemical stabile in fuel cell environments, as taught by Wilson.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15, 21, 33 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molter U.S. Pub. No. 2001/0049044, as applied to claim 22 above, and in view of Wilson et al. U.S. Patent 6,248,467.



Molter teaches a bipolar multipart separator plate as described hereinabove. Additionally the plate includes electrode supports 32 circumscribing portions of the bipolar plate. The material can be any porous medium capable of supporting the membrane assembly while providing fluid communication under acceptable mass flow conditions, including carbon paper or porous metal (¶25 & 26).

The reference is silent to a distributor plate comprising graphite, or graphite in the sealing layer.

Molter and Wilson are properly combinable because they are from the same field of endeavor namely, the fabrication of multipart separator plates.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ graphite in distributor of Molter because the material is inexpensive, light weight, readily available and chemical stable in fuel cell environments, as taught by Wilson.

Regarding the graphite in the sealing layer, it would have been obvious to rearrange the graphite electrode supports so that they are included in the sealing layer of the multipart plate, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

### ***Claim Objections***

Claims 17-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims fail to further limit the multipart separator plate. The claims are directed towards further intended use aspects of the fuel cell.

### ***Conclusions***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

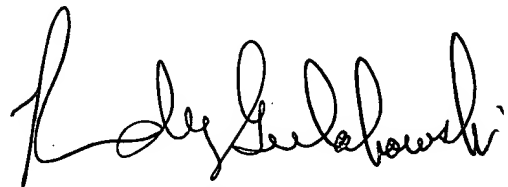
If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

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The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

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A handwritten signature in black ink, appearing to read "Randy Gulakowski". The signature is fluid and cursive, with the first name "Randy" and last name "Gulakowski" clearly distinguishable.

RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700